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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,745	06/19/2001	Sreenivas Subramoney	42390P11422	5588

7590 09/29/2004  
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EXAMINER	
LE, UYEN T	
ART UNIT	PAPER NUMBER
2171	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/885,745

Applicant(s)

SUBRAMONEY ET AL.

Examiner

Uyen T. Le

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's arguments regarding Yelland et al (US 6,219,678) have been fully considered but they are not persuasive.

Regarding claim 1, Applicant argues that "Yelland's omission in describing the storage of the new data object to the cache cannot be construed as a disclosure that no such storage takes place".

In response, claim 1 merely recites a negative limitation of "the contents of each new data object does not get stored to a cache memory" upon being copied to a new memory location. This negative limitation is broad enough to read on the fact that Yelland is completely silent about storing in cache upon copying the content of a data object to a new location. Furthermore, there is no indication that at the time of Yelland's invention, every time content of a data object is copied to a new location, the content of the new data object has to be stored in cache.

Regarding claims 2, 9, 16, applicant merely states that "the combination of Yelland and AAPA does not disclose the limitation that the contents of each new data object does not get stored to a cache memory" without pointing to how the examiner errs in interpreting the combination of Yelland and AAPA.

Regarding claims 3-7, 10-14, 17-21, applicant merely states that "the combination of Yelland, AAPA and Pentkovski does not disclose the limitation that the contents of each new data object does not get stored to a cache memory" without

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pointing to how the examiner errs in interpreting the combination of Yelland, AAPA and Pentkovski.

For all the reasons discussed above, rejection to claims 1-21 is maintained using the references of record in the previous Office Action.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 8, 15, 22 are rejected under 35 U.S.C. 102(a), (e) as being anticipated by Yelland et al (US 6,219,678) of record.

Regarding claim 1, Yelland discloses all the claimed subject matter including accessing a reference array referencing at least one data object having a content stored in a corresponding memory location (see column 4, lines 23-32), determining a new memory location for the contents of each of the at least one data object and copying the contents of the at least one data object directly to the new memory location (see column 4, lines 35-46). The claimed negative limitation of “contents of each new data object does not get stored to a cache memory” is broad enough to read on the fact that Yelland is completely silent about storing in cache upon copying the content of a data

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object to a new location. Furthermore, there is no indication that at the time of Yelland's invention, every time content of a data object is copied to a new location, the content has to be stored in cache. Since a cache is known in the art to store frequently accessed data only, there is no reason to assume that data copied to the new memory location in Yelland for reclaiming memory occupied by the original object (column 4, lines 6-46) has to be also stored in cache.

Claims 8, 15 correspond respectively to a computer program product and system for the method of claim 1, thus are rejected for the same reasons stated in claim 1 above.

Regarding claim 22, Yelland discloses all the claimed subject matter (see column 2, lines 49-61, column 4, lines 35-46) including "determining a data object to be a live data object" when Yelland shows the automatic memory management mechanism for reclaiming space. Clearly live objects have to be determined in order to copy to a new location. Yelland discloses "determining a new memory location for the data object" when Yelland shows the mechanism relocates objects, "updating references associated with the data object" when Yelland shows updating all references to the object. Claim 22, last paragraph merely reads on the fact that the method of Yelland relocates object by copying an object header and data from one area of memory to another. The claimed negative limitation of "such that a copy of contents of the new data object is not stored to a cache memory" is broad enough to read on the fact that Yelland is completely silent about storing in cache upon copying the content of a data object to a new location. Furthermore, there is no indication that at the time of Yelland's invention, every time

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content of a data object is copied to a new location, the content of the new data object has to be stored in cache.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 9, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yelland et al (US 6,219,678) of record, in view of applicant's admitted prior art (AAPA) at pages 1-3.

Regarding claim 2, although Yelland does not specifically show copying contents of consecutively referenced data objects to consecutive memory locations, AAPA shows copying contents of consecutively referenced data objects to consecutive memory locations (see pages 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed features while implementing the method of Yelland in order to perform systematic memory reclamation.

Claims 9, 16 correspond respectively to a computer program product and system for claim 2, thus are rejected for the same reasons stated in claim 2 above.

4. Claims 3-7, 10-14, 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yelland et al (US 6,219,678) of record, in view of applicant's admitted

prior art (AAPA) at pages 1-3, further in view of Pentkovski et al (US 6,356,270) of record.

Regarding claim 3, although Yelland and AAPA do not specifically show a write combine operation, it is well known in the art to use such an operation for efficient utilization of buffers for a sequence of non-temporal stores to scattered locations as shown by Pentlovski (see the abstract). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed feature while implementing the method of Yelland and AAPA in order to utilize buffers efficiently as taught by Pentkovski.

Claim 4 merely reads on the fact that any central processing units has specific capability. Therefore, the amount of data copied has to depend upon the central processing unit parameters as claimed.

Claim 5 is met by the fact that the garbage collection of Yelland is dynamic (see column 4, lines 6-46).

Regarding claim 6, Yelland discloses Java run-time environment (see column 4, lines 61-67).

Regarding claim 7, Yelland teaches that a plurality of garbage collection algorithms is readily available (see column 4, lines 5-22). AAPA further discloses using a moving garbage collection algorithm in a dynamic run-time environment (see pages 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to use a moving garbage collection algorithm and implement the method of claim 6 as the copy phase of a moving garbage collection algorithm since the method of Yelland operates in a dynamic run-time environment.

Claims 10-14 and 17-21 correspond respectively to a computer program product and system for the method of claims 3-7, thus are rejected for the same reasons stated in claims 3-7 above.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen T. Le whose telephone number is 703-305-4134. The examiner can normally be reached on M-F 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

24 September 2004



UYEN LE  
PRIMARY EXAMINER